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L6 and ((email\$ or electronic\$ or "e-mail") with (invok\$ or execut\$ or activat\$ or link\$))	1

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Search:

L7

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DATE: Tuesday, September 27, 2005 [Printable Copy](#) [Create Case](#)

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<i>DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR</i>		
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<u>L5</u> l4 and ((email\$ or electronic\$ or "e-mail") with (invok\$ or activat\$ or link\$) with server)	8	<u>L5</u>
<u>L4</u> L3 and 705?..ccls.	58	<u>L4</u>
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<u>L2</u> L1 and 705?..ccls.	225	<u>L2</u>
<u>L1</u> @ad<=19990129 and ((email\$ or electronic\$ or "e-mail") with (invok\$ or activat\$ or link\$))	30742	<u>L1</u>

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L7: Entry 1 of 1

File: USPT

Jun 23, 1998

DOCUMENT-IDENTIFIER: US 5771355 A

TITLE: Transmitting electronic mail by either reference or value at file-replication points to minimize costs

Detailed Description Text (9):

As will further be appreciated, more than one user may be coupled to each HTTP server, for example through a LAN such as LAN 315 as illustrated with respect to WWW HTTP server 310. As will further be appreciated, system 300 comprises other types of nodes or elements. As will be understood by those skilled in the art, in prior art e-mail techniques, a sending user of a network desiring to send an e-mail message with one or more attachments to a recipient on the network transmits the e-mail message plus attachment across the network (for example, a network such as Internet 301) through various links and nodes of the network until it reaches the recipient user.

Detailed Description Text (26):

Referring now to FIG. 5, there is illustrated another computer network 500, in accordance with a preferred embodiment of the present invention. As illustrated, network 500 comprises a plurality of LANs such as LANs 501, 530, 540. LAN 501 interconnects a plurality of local users such as sending user 502 and recipient user 503. The lines radiating from each LAN represent subnets such as subnet 506 which connect a subset of the LAN's users to the LAN. Different LANs are typically connected to each other via WAN links such as WAN link 520. Some LANs may also be intercoupled via coupled subnets, as illustrated with respect to the coupling of subnet 536 of LAN 530 with subnet 546 of LAN 540 at junction 550. For purposes of transmitting e-mail messages and attachments to and from users on different LANs, post office servers such as post officer servers 505 and 535 are utilized to interface via the WAN link, as illustrated in FIG. 5. As will be appreciated, on some LANs more than one post office may be utilized to handle a subset of the users of the LAN. Thus, a sender 502 may transmit e-mail to a recipient 503 on the same LAN by utilizing the services of LAN 501 and post office 505, as will be appreciated by those skilled in the art and as further described hereinabove.

Detailed Description Text (29):

As will be appreciated, in a system in which attachment by value is utilized, if all relevant users are within a single high-bandwidth network or LAN, then the costs associated with attaching files by value to e-mail messages are dominated by the memory costs of keeping separate copies of attachments for each recipient of the attachment. If the network is bandwidth limited, then such costs are dominated by the costs of network delay. However, the method of attachment by reference can be accompanied by the same problem as attachment by value if too many recipients of an e-mail message are across a costly link in the network. As will be understood, in the limiting case where every recipient decides to look at or otherwise access, retrieve, or utilize an attachment file which is attached by reference, then the method of attachment by reference can degenerate into the worst case of attachment by value, since a separate copy of the attachment must traverse the costly link in the network for each recipient. (However, as will be understood, the frequency of such worst case results may be minimized if caching proxy servers are utilized,

where, for example, a server of the network closer in terms of cost to a recipient retains for a certain time a copy of the attachment when it passes the attachment to a recipient of the e-mail message, so that the copy may in some instances be sent to a subsequent recipient that requests the attachment without the attachment needing to be retrieved from its original storage location, which is further in terms of cost than its temporary cached location.) For example, if ten users coupled to LAN 530 were to be listed as a recipient of an e-mail message sent by sender 502, if each such recipient accesses the attachment that is attached by reference, then ten retrievals of the attachment would have to be made across WAN link 520. In this case it may have been cheaper computationally and communications-wise to have transmitted the entire e-mail with attachment by value to post office 535, whereupon post office 535 may more efficiently distribute the e-mail and attachment to all ten local recipients, since only one use of WAN link 520 would have been required to transmit the relatively large e-mail attachment.

Detailed Description Text (30):

This problem may be addressed when using an attachment-by-reference e-mail system by copying the attachment to a location in the network where it is likely that fetching the attachment will cost less. In general, this location is referred to in the present application as a file-replication point, such as a post office. For example, when an attachment reference that accompanies an e-mail message crosses a WAN link such as WAN link 520, the post office at the receiving side of the WAN link (post office 535, for example) automatically creates a copy of the attachment at the receiving post office by retrieving the attachment from its location as pointed to by the attachment reference. The receiving post office also changes all attachment references to point to the newly-created copy that is maintained by the receiving post office. As described above, this may be distributed as necessary to local recipients without engaging high communications medium costs. If further WAN links or post offices remain to be traveled through by the e-mail message before reaching a recipient, each subsequent post office may make further copies of an attachment and change the attachment reference as required to point to the latest storage location of the copy of the attachment file, or may leave the attachment reference untouched as the case ordains.

Detailed Description Text (33):

Thus, in a preferred embodiment of the present invention the cost of attachment file transport and of attachment file storage is, however, estimated. Generally, the expected cost of recipients retrieving an attachment may be estimated by summing the cost for the attachment to cross each LAN segment and each WAN link or segment on its way to the recipient, and the cost of any storage along the route. Storage costs, as will be understood, include the preservation cost associated with the actual storage medium, such as a hard drive, and processing cost associated with the computations required to move the attachment in and out of the storage medium. Also, storage costs outside the network, such as at a user's machine, will be different from storage costs inside the e-mail system. For example, if the e-mail system is short on the amount of hard disk space, then such costs should increase, to provide a push or "Incentive" to use relatively more of the user's resources for storage purposes. Similarly, if traffic across a particular WAN link becomes heavy, the e-mail system of the present invention will increase the cost of the WAN segment, resulting in more resort to attachment replication and attachment reference substitution so that traffic over the WAN link is reduced.

Detailed Description Text (52):

Referring now to FIG. 6, there is shown an HTTP-only e-mail system 600 in accordance with a preferred embodiment of the present invention. In a preferred embodiment, a potential recipient user 622 of a network such as the WWW running on the Internet 601 as a backbone, first sets up a reserved hyper-text markup language ("HTML") page 625 on his personal server 620. As will be understood, HTML commands are sent by host machines (such as the recipient's machine 622, in this example) to browsing users' web browsers to instruct the web browser how to display

information, such as text, graphics, and available hypertext links. The function of this page 625 is to allow visitors (i.e., other users browsing the recipient's home page, such as sender 612) to modify the page's contents by writing an URL (to refer back to the location of an e-mail message, attachment 611, or other location) and a subject or description line or other message. Sender 612 may use a typical web browser to view recipient 622's "mail page." By accessing an appropriate hypertext link available on the recipient's mail page (such as a hypertext link allowing a browser to "leave an e-mail message"), a process is caused to be executed on the recipient's machine, which is typically a common gateway interface ("CGI") script. As will be appreciated, a CGI script allows a browsing user 612 to tell the recipient's server 620 to do something different than usual, such as returning an HTML form 625. This CGI script returns HTML form 625 to the sender, which asks for the URL 627 and the subject or primary message 626 (if any) of the e-mail. As will be appreciated, the URL 627 that should be incorporated into or attached to the e-mail message 626 may be automatically entered by sender 612's machine in a process invisible to sender 612, or may be entered by the sender 612 himself. If accepted, the URL 627 and a corresponding hypertext link (which allows the recipient to read the attachment pointed to with pointer 630 by the URL) are incorporated onto the recipient's mail page, stored at server 620. Therefore, at a later time, the recipient 622 can view the incoming mail page and retrieve messages, including message 626 and attachment 611, if desired, as attachment 611 is stored locally to sender 612 at server 610 but visible to users of Internet 601 such as recipient 622.

Detailed Description Text (53):

As will be understood, the URL 627 which is sent as the message pointer may be either simple or very complex. For example, it may be as simple as a particular attachment file which may be retrieved, such as a text file or spreadsheet. Alternatively, the URL may instead be a pointer to an HTML document itself at another location accessible by or visible to users of the WWW. As will be appreciated, an advantage of using such complex URLs is that an "attachment" may be contextually included in the body of an e-mail message, rather than merely attached as an available file for viewing with less context. For instance, the subject or longer e-mail primary message may be left, having a hypertext link based on the URL to a spreadsheet. The words "our financial analysis" could be incorporated as a hypertext link into the subject line or into a longer text e-mail message left on the recipient's mail page. Then, instead of reading the text and then opening the attached spreadsheet (with some concomitant loss of context), as in current e-mail systems, the user could click on the reference itself while reading the message, thus improving the textual reference.

CLAIMS:

23. A storage medium having stored thereon a plurality of instructions for transmitting e-mail over a network through a current node of the network, wherein the plurality of instructions, when executed by a processor of the current node, cause the processor to perform the steps of:

- (a) receiving at a current node in the network an e-mail message to be distributed to at least one recipient, the e-mail message comprising an attachment reference comprising the network address of an attachment stored locally to a previous node of the network;
- (b) comparing the expected costs of moving the attachment from the previous node to the at least one recipient by use of the attachment reference, to the costs of moving the attachment locally to the current node plus the expected costs of moving the attachment from the current node to the at least one recipient by use of the attachment reference; and
- (c) retrieving a copy of the attachment, storing the attachment locally to the

current node, and updating the attachment reference, in accordance with the comparison.

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Search Results - Record(s) 1 through 8 of 8 returned.

1. Document ID: US 6839741 B1

Using default format because multiple data bases are involved.

L12: Entry 1 of 8

File: USPT

Jan 4, 2005

US-PAT-NO: 6839741

DOCUMENT-IDENTIFIER: US 6839741 B1

TITLE: Facility for distributing and providing access to electronic mail message attachments

DATE-ISSUED: January 4, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tsai; Peter Ming	Colorado Springs	CO		

US-CL-CURRENT: 709/217; 707/10, 707/9, 709/201, 709/207, 709/229, 726/14

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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2. Document ID: US 6651087 B1

L12: Entry 2 of 8

File: USPT

Nov 18, 2003

US-PAT-NO: 6651087

DOCUMENT-IDENTIFIER: US 6651087 B1

TITLE: Method and system for publishing an electronic file attached to an electronic mail message

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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3. Document ID: US 6618747 B1

L12: Entry 3 of 8

File: USPT

Sep 9, 2003

US-PAT-NO: 6618747

DOCUMENT-IDENTIFIER: US 6618747 B1

TITLE: Electronic communication delivery confirmation and verification system

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Draft
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 4. Document ID: US 6366949 B1

L12: Entry 4 of 8

File: USPT

Apr 2, 2002

US-PAT-NO: 6366949

DOCUMENT-IDENTIFIER: US 6366949 B1

TITLE: Method and arrangement relating to communication in a network

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Draft
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 5. Document ID: US 6327612 B1

L12: Entry 5 of 8

File: USPT

Dec 4, 2001

US-PAT-NO: 6327612

DOCUMENT-IDENTIFIER: US 6327612 B1

TITLE: Electronic mail transmission with selective file attachment

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Draft
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 6. Document ID: US 6092114 A

L12: Entry 6 of 8

File: USPT

Jul 18, 2000

US-PAT-NO: 6092114

DOCUMENT-IDENTIFIER: US 6092114 A

TITLE: Method and system for determining the location for performing file-format conversions of electronics message attachments

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Draft
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 7. Document ID: US 5903723 A

L12: Entry 7 of 8

File: USPT

May 11, 1999

US-PAT-NO: 5903723

DOCUMENT-IDENTIFIER: US 5903723 A

TITLE: Method and apparatus for transmitting electronic mail attachments with attachment references

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMPC	Draft
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8. Document ID: US 5771355 A

L12: Entry 8 of 8

File: USPT

Jun 23, 1998

Y
US-PAT-NO: 5771355

DOCUMENT-IDENTIFIER: US 5771355 A

TITLE: Transmitting electronic mail by either reference or value at file-replication points to minimize costs

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequence](#) [Attachments](#) [Claims](#) [KMIC](#) [Drawn D](#)[Clear](#)[Generate Collection](#)[Print](#)[Fwd Refs](#)[Bkwd Refs](#)[Generate OACS](#)

Terms	Documents
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Y

L12: Entry 1 of 8

File: USPT

Jan 4, 2005

DOCUMENT-IDENTIFIER: US 6839741 B1

TITLE: Facility for distributing and providing access to electronic mail message attachments

Detailed Description Text (20):

The sender 12 sends the email 28 with the attachment 26 towards the recipients 14A, 14B and 14C via an email service 30. The email service 30 may take many forms including POP 3, IMAP 4, Microsoft Exchange, Microsoft Mail, or other email services. The recipients 14A, 14B and 14C subscribe to a service provided by the attachment server 90. This service strips attachments from incoming emails for the recipients. The attachment server 90 may also serve as an email gateway for the recipients 14A, 14B and 14C. The attachment server 90 receives the email 28 with the attachment 26. The attachment server 90 includes a detector that detects the presence of the attachment 26. The attachment server 90 then activates a stripper that strips the attachment 26 from the email 28. The attachment server sends the remaining portion of the email 28 onto the recipients 14A, 14B and 14C. The attachment 26 may be stored at the attachment server 90 in the native format or in an HTML format. The attachment server may include a converter for converting the attachment from the native format into the HTML format. Several conventional application programs (e.g. Microsoft Word) contain converters for performing such a conversion. This configuration is especially well-adopted for an instance wherein the attachment server 90 serves as an email gateway for a given LAN 91 that interconnects the recipients 14A, 14B, and 14C.

US Reference Patent Number (1):5771355[Previous Doc](#) [Next Doc](#) [Go to Doc#](#)

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L12: Entry 2 of 8

File: USPT

Nov 18, 2003

DOCUMENT-IDENTIFIER: US 6651087 B1

TITLE: Method and system for publishing an electronic file attached to an electronic mail message

Abstract Text (1):

Publishing content associated with an electronic file attached to an electronic mail message by executing instructions contained in the electronic mail attachment and accessing the content at a remote computer server identified by the attached file. The attached file includes computer-executable instructions, such as a computer program or script, which include an identifier for a remote server connected to a distributed computer network. This identified remote server typically hosts a web site containing content intended for viewing by the recipient of the electronic mail message. In response to launching the attached file of the electronic mail message with a viewer program, a browser program can be opened to enable the recipient to view the content of the identified remote server, typically a web site on an intranet or the global Internet. This supports the communication of electronic content by using an electronic mail message to transport an electronic file attachment having instructions that, when executed by the recipient's computer, enable the recipient to view the electronic content by accessing a server computer connected to distributed computer network.

Brief Summary Text (9):

More particularly described, the present invention supports the communication of electronic content by using an electronic mail message to transport an electronic file attachment having instructions that, when executed by the recipient's computer, enable the recipient to view the electronic content by accessing a server computer identified by the electronic file attachment. In response to an input signal transmitted by a user's manipulation of an input device, the electronic file attachment is accessed by an electronic mail program. This electronic file attachment is typically opened for viewing within the viewing window of a document view program. For one aspect of the invention, the electronic file attachment contains a limited amount of content, such as a text-based instruction message, for viewing by the recipient within the viewing window. For example, a representative instruction message offers the recipient instructions on how to access a larger set of content by launching the electronic file attachment. In response to an input signal for launching the electronic file attachment, a browser program is launched to access content at a remote server computer identified by the attached file. This results in an automated transition from the electronic mail program environment to the browser program environment to support viewing of the content hosted at the remote server computer.

Brief Summary Text (10):

Prior to the advent of the present invention, a user of an electronic mail program would have forwarded content of interest to the recipient of the electronic mail message within the body of an electronic mail attachment. The present invention enables the user to post content at a remote server computer and to send an electronic mail attachment containing instructions (rather than lengthy content) that command the recipient's computer to identify and access this content at the remote server computer. By accessing the electronic mail attachment, instructions contained in this attached file are executed to support the presentation by a

browser program of content maintained at the identified remote server computer. The attached file can include an identifier, such as an address or link for a web site, that identifies a storage mechanism other than the electronic mail attachment for the content intended for delivery to the recipient of the electronic mail message.

US Reference Patent Number (3):

5771355

CLAIMS:

1. A computer-implemented method for communicating content intended for delivery to a recipient of an electronic mail message, comprising: receiving the electronic mail message having an attached electronic file, the attached electronic file comprising instructions for displaying an instruction message and displaying the content; responsive to a selection of the electronic mail message, presenting the electronic mail message and an attachment indicator to the recipient; responsive to a selection of the attachment indicator, executing the instructions of the attached electronic file so that the instruction message is displayed and a launch control is displayed; and responsive to a selection of the launch control, accessing a remote server that hosts the content and displaying the content to the recipient.

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L12: Entry 2 of 8

File: USPT

Nov 18, 2003

US-PAT-NO: 6651087

DOCUMENT-IDENTIFIER: US 6651087 B1

TITLE: Method and system for publishing an electronic file attached to an electronic mail message

DATE-ISSUED: November 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dennis; Gary J.	Duluth	GA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE ZIP CODE	COUNTRY TYPE CODE
BellSouth Intellectual Property Corporation	Wilmington	DE	02

APPL-NO: 09/ 238445 [PALM]

DATE FILED: January 28, 1999

INT-CL: [07] G06 F 15/16

US-CL-ISSUED: 709/206; 709/205, 709/217, 709/219

US-CL-CURRENT: 709/206; 709/205, 709/217, 709/219

FIELD-OF-SEARCH: 709/203, 709/217, 709/219, 709/225, 709/229, 709/235, 709/207, 709/206, 709/209, 709/205

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>5293250</u>	March 1994	Okumura et al.	358/402
<input type="checkbox"/> <u>5675507</u>	October 1997	Bobo, II	364/514
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<input type="checkbox"/> <u>5790790</u>	August 1998	Smith et al.	709/206
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<input type="checkbox"/>	<u>6332156</u>	December 2001	Cho et al.	709/206
<input type="checkbox"/>	<u>6332164</u>	December 2001	Jain	709/235
<input type="checkbox"/>	<u>6351763</u>	February 2002	Kawanaka	709/206
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<input type="checkbox"/>	<u>6430177</u>	August 2002	Luzeski et al.	370/356
<input type="checkbox"/>	<u>6463462</u>	October 2002	Smith et al.	709/206
<input type="checkbox"/>	<u>6466968</u>	October 2002	Shirai et al.	709/206
<input type="checkbox"/>	<u>6487599</u>	November 2002	Smith et al.	

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FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 593 384	April 1994	EP	

OTHER PUBLICATIONS

"On-Demand Retrieval of Attached File in Mail System;" IBM Technical Disclosure

Bulletin, vol. 41, No. 1, Jan. 1998.
International Search Report, PCT/US 00/02398.

ART-UNIT: 2154

PRIMARY-EXAMINER: Najjar; Saleh

ATTY-AGENT-FIRM: Cantor Colburn LLP

ABSTRACT:

Publishing content associated with an electronic file attached to an electronic mail message by executing instructions contained in the electronic mail attachment and accessing the content at a remote computer server identified by the attached file. The attached file includes computer-executable instructions, such as a computer program or script, which include an identifier for a remote server connected to a distributed computer network. This identified remote server typically hosts a web site containing content intended for viewing by the recipient of the electronic mail message. In response to launching the attached file of the electronic mail message with a viewer program, a browser program can be opened to enable the recipient to view the content of the identified remote server, typically a web site on an intranet or the global Internet. This supports the communication of electronic content by using an electronic mail message to transport an electronic file attachment having instructions that, when executed by the recipient's computer, enable the recipient to view the electronic content by accessing a server computer connected to distributed computer network.

6 Claims, 9 Drawing figures

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L12: Entry 7 of 8

File: USPT

May 11, 1999

DOCUMENT-IDENTIFIER: US 5903723 A

TITLE: Method and apparatus for transmitting electronic mail attachments with attachment references

Detailed Description Text (9):

As will further appreciated, more than one user may be coupled to each HTTP server, for example through a LAN such as LAN 315 as illustrated with respect to WWW HTTP server 310. As will further be appreciated, system 300 comprises other types of nodes or elements. As will be understood by those skilled in the art, in prior art e-mail techniques, a sending user of a network desiring to send an e-mail message with one or more attachments to a recipient on the network transmits the e-mail message plus attachment across the network (for example, a network such as Internet 301) through various links and nodes of the network until it reaches the recipient user.

Detailed Description Text (26):

Referring now to FIG. 5, there is illustrated another computer network 500, in accordance with a preferred embodiment of the present invention. As illustrated, network 500 comprises a plurality of LANs such as LANs 501, 530, 540. LAN 501 interconnects a plurality of local users such as sending user 502 and recipient user 503. The lines radiating from each LAN represent subnets such as subnet 506 which connect a subset of the LAN's users to the LAN. Different LANs are typically connected to each other via WAN links such as WAN link 520. Some LANs may also be intercoupled via coupled subnets, as illustrated with respect to the coupling of subnet 536 of LAN 530 with subnet 546 of LAN 540 at junction 550. For purposes of transmitting e-mail messages and attachments to and from users on different LANs, post office servers such as post officer servers 505 and 535 are utilized to interface via the WAN link, as illustrated in FIG. 5. As will be appreciated, on some LANs more than one post office may be utilized to handle a subset of the users of the LAN. Thus, a sender 502 may transmit e-mail to a recipient 503 on the same LAN by utilizing the services of LAN 501 and post office 505, as will be appreciated by those skilled in the art and as further described hereinabove.

Detailed Description Text (29):

As will be appreciated, in a system in which attachment by value is utilized, if all relevant users are within a single high-bandwidth network or LAN, then the costs associated with attaching files by value to e-mail messages are dominated by the memory costs of keeping separate copies of attachments for each recipient of the attachment. If the network is bandwidth limited, then such costs are dominated by the costs of network delay. However, the method of attachment by reference can be accompanied by the same problem as attachment by value if too many recipients of an e-mail message are across a costly link in the network. As will be understood, in the limiting case where every recipient decides to look at or otherwise access, retrieve, or utilize an attachment file which is attached by reference, then the method of attachment by reference can degenerate into the worst case of attachment by value, since a separate copy of the attachment must traverse the costly link in the network for each recipient. (However, as will be understood, the frequency of such worst case results may be minimized if caching proxy servers are utilized, where, for example, a server of the network closer in terms of cost to a recipient retains for a certain time a copy of the attachment when it passes the attachment

to a recipient of the e-mail message, so that the copy may in some instances be sent to a subsequent recipient that requests the attachment without the attachment needing to be retrieved from its original storage location, which is further in terms of cost than its temporary cached location.) For example, if ten users coupled to LAN 530 were to be listed as a recipient of an e-mail message sent by sender 502, if each such recipient accesses the attachment that is attached by reference, then ten retrievals of the attachment would have to be made across WAN link 520. In this case it may have been cheaper computationally and communications-wise to have transmitted the entire e-mail with attachment by value to post office 535, whereupon post office 535 may more efficiently distribute the e-mail and attachment to all ten local recipients, since only one use of WAN link 520 would have been required to transmit the relatively large e-mail attachment.

Detailed Description Text (52):

Referring now to FIG. 6, there is shown an HTTP-only e-mail system 600 in accordance with a preferred embodiment of the present invention. In a preferred embodiment, a potential recipient user 622 of a network such as the WWW running on the Internet 601 as a backbone, first sets up a reserved hyper-text markup language ("HTML") page 625 on his personal server 620. As will be understood, HTML commands are sent by host machines (such as the recipient's machine 622, in this example) to browsing users' web browsers to instruct the web browser how to display information, such as text, graphics, and available hypertext links. The function of this page 625 is to allow visitors (i.e., other users browsing the recipient's home page, such as sender 612) to modify the page's contents by writing an URL (to refer back to the location of an e-mail message, attachment 611, or other location) and a subject or description line or other message. Sender 612 may use a typical web browser to view recipient 622's "mail page." By accessing an appropriate hypertext link available on the recipient's mail page (such as a hypertext link allowing a browser to "leave an e-mail message"), a process is caused to be executed on the recipient's machine, which is typically a common gateway interface ("CGI") script. As will be appreciated, a CGI script allows a browsing user 612 to tell the recipient's server 620 to do something different than usual, such as returning an HTML form 625. This CGI script returns HTML form 625 to the sender, which asks for the URL 627 and the subject or primary message 626 (if any) of the e-mail. As will be appreciated, the URL 627 that should be incorporated into or attached to the e-mail message 626 may be automatically entered by sender 612's machine in a process invisible to sender 612, or may be entered by the sender 612 himself. If accepted, the URL 627 and a corresponding hypertext link (which allows the recipient to read the attachment pointed to with pointer 630 by the URL) are incorporated onto the recipient's mail page, stored at server 620. Therefore, at a later time, the recipient 622 can view the incoming mail page and retrieve messages, including message 626 and attachment 611, if desired, as attachment 611 is stored locally to sender 612 at server 610 but visible to users of Internet 601 such as recipient 622.

US Reference Patent Number (10):
5771355

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L12: Entry 7 of 8

File: USPT

May 11, 1999

US-PAT-NO: 5903723

DOCUMENT-IDENTIFIER: US 5903723 A

TITLE: Method and apparatus for transmitting electronic mail attachments with attachment references

DATE-ISSUED: May 11, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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ASSIGNEE-INFORMATION:

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APPL-NO: 08/ 576506 [PALM]

DATE FILED: December 21, 1995

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 395/200.3; 395/200.31, 395/200.35, 395/200.75, 707/10

US-CL-CURRENT: 709/200; 707/10, 709/201, 709/205, 709/245

FIELD-OF-SEARCH: 395/200.01, 395/200.02, 395/200.03, 395/200.06, 395/200.08, 395/200.09, 395/200.36, 395/200.44, 395/200.47-200.5, 395/200.75, 707/10, 707/104

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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<input type="checkbox"/> <u>5418908</u>	May 1995	Keller et al.	395/200.36
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<input type="checkbox"/>	<u>5781901</u>	July 1998	Kuzma	707/10

ART-UNIT: 278

PRIMARY-EXAMINER: Maung; Zarni

ASSISTANT-EXAMINER: Barot; Bharat

ATTY-AGENT-FIRM: Murray; William H. Kinsella; N. Stephan

ABSTRACT:

A method, apparatus, and storage medium for transmitting e-mail attachments from a sender of a network to at least one recipient of the network. According to a preferred embodiment, an attachment is stored in a storage device visible to the network and relatively local to the sender, the attachment having a unique network address. An attachment reference is generated, comprising the network address of the attachment. The attachment reference is transmitted from the sender to the at least one recipient.

45 Claims, 7 Drawing figures

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L5: Entry 1 of 8

File: USPT

Jan 19, 1999

DOCUMENT-IDENTIFIER: US 5862223 A

TITLE: Method and apparatus for a cryptographically-assisted commercial network system designed to facilitate and support expert-based commerce

DATE ISSUED (1):19990119Detailed Description Text (18):

Network interface 245 is the gateway to communicate with end users and experts through respective end user interface 500 and expert interface 400. Conventional internal or external modems may serve as network interface 245. Network interface 245 supports modems at a range of baud rates from 1200 upward, but may combine such inputs into a T1 or T3 line if more bandwidth is required. In a preferred embodiment, network interface 245 is connected with the Internet and/or any of the commercial online services such as America Online, CompuServe, or Prodigy, allowing end users access from a wide range of online connections. Several commercial email servers include the above functionality. NCD Software manufactures "Post.Office", a secure server-based electronic mail software package designed to link people and information over enterprise networks and the Internet. The product is platform independent and utilizes open standards based on Internet protocols. Users can exchange messages with enclosures such as files, graphics, video and audio. The system also supports multiple languages. Alternatively, network interface 245 may be configured as a voice mail interface web site, BBS, or email address.

Detailed Description Text (71):

FIG. 17 shows how the user accesses message window 170. At step 1700, the end user connects to an online service. This might be America Online, CompuServe, Prodigy, or even a BBS as shown in box 1705. The online service, however, acts only as the interface for the present invention. Control of user access, qualifications, billing, payment, and other functions still resides at central controller 200. Online services act merely as a convenient conduit for synchronous communications given their capacity to handle tens of thousands of simultaneous communications. In another embodiment, central controller 200 handles all synchronous connections directly, eliminating the need for online networks. At step 1710, a communications channel is opened between central controller 200 and the online service. The communications channel is a direct electronic link such as a circuit switched or packet switched network connection. Once this connection has been made, the end user provides his ID number at step 1720 and his payment information at step 1730. Payment information includes a credit card account number, bank account number or other payment method as shown in box 1735.

Current US Cross Reference Classification (1):705/1[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

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L5: Entry 5 of 8

File: USPT

Jun 23, 1998

DOCUMENT-IDENTIFIER: US 5771355 A

TITLE: Transmitting electronic mail by either reference or value at file-replication points to minimize costs

DATE ISSUED (1):19980623Detailed Description Text (26):

Referring now to FIG. 5, there is illustrated another computer network 500, in accordance with a preferred embodiment of the present invention. As illustrated, network 500 comprises a plurality of LANs such as LANs 501, 530, 540. LAN 501 interconnects a plurality of local users such as sending user 502 and recipient user 503. The lines radiating from each LAN represent subnets such as subnet 506 which connect a subset of the LAN's users to the LAN. Different LANs are typically connected to each other via WAN links such as WAN link 520. Some LANs may also be intercoupled via coupled subnets, as illustrated with respect to the coupling of subnet 536 of LAN 530 with subnet 546 of LAN 540 at junction 550. For purposes of transmitting e-mail messages and attachments to and from users on different LANs, post office servers such as post officer servers 505 and 535 are utilized to interface via the WAN link, as illustrated in FIG. 5. As will be appreciated, on some LANs more than one post office may be utilized to handle a subset of the users of the LAN. Thus, a sender 502 may transmit e-mail to a recipient 503 on the same LAN by utilizing the services of LAN 501 and post office 505, as will be appreciated by those skilled in the art and as further described hereinabove.

Detailed Description Text (29):

As will be appreciated, in a system in which attachment by value is utilized, if all relevant users are within a single high-bandwidth network or LAN, then the costs associated with attaching files by value to e-mail messages are dominated by the memory costs of keeping separate copies of attachments for each recipient of the attachment. If the network is bandwidth limited, then such costs are dominated by the costs of network delay. However, the method of attachment by reference can be accompanied by the same problem as attachment by value if too many recipients of an e-mail message are across a costly link in the network. As will be understood, in the limiting case where every recipient decides to look at or otherwise access, retrieve, or utilize an attachment file which is attached by reference, then the method of attachment by reference can degenerate into the worst case of attachment by value, since a separate copy of the attachment must traverse the costly link in the network for each recipient. (However, as will be understood, the frequency of such worst case results may be minimized if caching proxy servers are utilized, where, for example, a server of the network closer in terms of cost to a recipient retains for a certain time a copy of the attachment when it passes the attachment to a recipient of the e-mail message, so that the copy may in some instances be sent to a subsequent recipient that requests the attachment without the attachment needing to be retrieved from its original storage location, which is further in terms of cost than its temporary cached location.) For example, if ten users coupled to LAN 530 were to be listed as a recipient of an e-mail message sent by sender 502, if each such recipient accesses the attachment that is attached by reference, then ten retrievals of the attachment would have to be made across WAN link 520. In this case it may have been cheaper computationally and communications-

wise to have transmitted the entire e-mail with attachment by value to post office 535, whereupon post office 535 may more efficiently distribute the e-mail and attachment to all ten local recipients, since only one use of WAN link 520 would have been required to transmit the relatively large e-mail attachment.

Detailed Description Text (30):

This problem may be addressed when using an attachment-by-reference e-mail system by copying the attachment to a location in the network where it is likely that fetching the attachment will cost less. In general, this location is referred to in the present application as a file-replication point, such as a post office. For example, when an attachment reference that accompanies an e-mail message crosses a WAN link such as WAN link 520, the post office at the receiving side of the WAN link (post office 535, for example) automatically creates a copy of the attachment at the receiving post office by retrieving the attachment from its location as pointed to by the attachment reference. The receiving post office also changes all attachment references to point to the newly-created copy that is maintained by the receiving post office. As described above, this may be distributed as necessary to local recipients without engaging high communications medium costs. If further WAN links or post offices remain to be traveled through by the e-mail message before reaching a recipient, each subsequent post office may make further copies of an attachment and change the attachment reference as required to point to the latest storage location of the copy of the attachment file, or may leave the attachment reference untouched as the case ordains.

Detailed Description Text (33):

Thus, in a preferred embodiment of the present invention the cost of attachment file transport and of attachment file storage is, however, estimated. Generally, the expected cost of recipients retrieving an attachment may be estimated by summing the cost for the attachment to cross each LAN segment and each WAN link or segment on its way to the recipient; and the cost of any storage along the route. Storage costs, as will be understood, include the preservation cost associated with the actual storage medium, such as a hard drive, and processing cost associated with the computations required to move the attachment in and out of the storage medium. Also, storage costs outside the network, such as at a user's machine, will be different from storage costs inside the e-mail system. For example, if the e-mail system is short on the amount of hard disk space, then such costs should increase, to provide a push or "Incentive" to use relatively more of the user's resources for storage purposes. Similarly, if traffic across a particular WAN link becomes heavy, the e-mail system of the present invention will increase the cost of the WAN segment, resulting in more resort to attachment replication and attachment reference substitution so that traffic over the WAN link is reduced.

Detailed Description Text (52):

Referring now to FIG. 6, there is shown an HTTP-only e-mail system 600 in accordance with a preferred embodiment of the present invention. In a preferred embodiment, a potential recipient user 622 of a network such as the WWW running on the Internet 601 as a backbone, first sets up a reserved hyper-text markup language ("HTML") page 625 on his personal server 620. As will be understood, HTML commands are sent by host machines (such as the recipient's machine 622, in this example) to browsing users' web browsers to instruct the web browser how to display information, such as text, graphics, and available hypertext links. The function of this page 625 is to allow visitors (i.e., other users browsing the recipient's home page, such as sender 612) to modify the page's contents by writing an URL (to refer back to the location of an e-mail message, attachment 611, or other location) and a subject or description line or other message. Sender 612 may use a typical web browser to view recipient 622's "mail page." By accessing an appropriate hypertext link available on the recipient's mail page (such as a hypertext link allowing a browser to "leave an e-mail message"), a process is caused to be executed on the recipient's machine, which is typically a common gateway interface ("CGI") script. As will be appreciated, a CGI script allows a browsing user 612 to tell the

recipient's server 620 to do something different than usual, such as returning an HTML form 625. This CGI script returns HTML form 625 to the sender, which asks for the URL 627 and the subject or primary message 626 (if any) of the e-mail. As will be appreciated, the URL 627 that should be incorporated into or attached to the e-mail message 626 may be automatically entered by sender 612's machine in a process invisible to sender 612, or may be entered by the sender 612 himself. If accepted, the URL 627 and a corresponding hypertext link (which allows the recipient to read the attachment pointed to with pointer 630 by the URL) are incorporated onto the recipient's mail page, stored at server 620. Therefore, at a later time, the recipient 622 can view the incoming mail page and retrieve messages, including message 626 and attachment 611, if desired, as attachment 611 is stored locally to sender 612 at server 610 but visible to users of Internet 601 such as recipient 622.

Detailed Description Text (53):

As will be understood, the URL 627 which is sent as the message pointer may be either simple or very complex. For example, it may be as simple as a particular attachment file which may be retrieved, such as a text file or spreadsheet. Alternatively, the URL may instead be a pointer to an HTML document itself at another location accessible by or visible to users of the WWW. As will be appreciated, an advantage of using such complex URLs is that an "attachment" may be contextually included in the body of an e-mail message, rather than merely attached as an available file for viewing with less context. For instance, the subject or longer e-mail primary message may be left, having a hypertext link based on the URL to a spreadsheet. The words "our financial analysis" could be incorporated as a hypertext link into the subject line or into a longer text e-mail message left on the recipient's mail page. Then, instead of reading the text and then opening the attached spreadsheet (with some concomitant loss of context), as in current e-mail systems, the user could click on the reference itself while reading the message, thus improving the textual reference.

Current US Cross Reference Classification (1):

705/7

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